Lori Thompson Sentman

EDUCATION:

Ph.D. *in progress*, Atmospheric Science
Rutgers University, The Graduate School of New Brunswick
New Brunswick, NJ
2012-present, NOAA Graduate Sciences Program

M.S., Environmental Science, Atmospheric Science option
Rutgers University, The Graduate School of New Brunswick
New Brunswick, NJ
January 2002

B.S., Atmospheric Science
Rutgers University, Cook College
New Brunswick, NJ
May 1997

EXPERIENCE:

09/08 to Present

National Oceanic and Atmospheric Administration (NOAA)
Geophysical Fluid Dynamics Laboratory, Research Physical Scientist
Biogeochemistry, Ecosystems and Climate team member responsible for the development of improved earth system models and research on the interactions and feedbacks of the biosphere with climate on varying temporal and spatial scales. Research initiatives include sensitivity of CO2 fertilization, impact of climate on the terrestrial carbon cycle, the effect of land use on the terrestrial carbon stores and stocks from decadal to centennial time scales and the biophysical effects of land use on climate. Execution, analysis, quality control and data publishing of ESM2M and ESM2G CMIP5/IPCC AR5 experiments. Effective communication of research via oral presentations and written manuscripts.

03/08 to 09/08

High Performance Technologies, Inc., Associate II-Software Engineer:
NOAA/Geophysical Fluid Dynamics Laboratory, Princeton, NJ.
Contracted at the National Oceanic and Atmospheric Administration's (NOAA) Geophysical Fluid Dynamics Laboratory (GFDL) as part of the Climate and Ecosystems group. Tasks include model execution and management of the earth system model components and the mixed layer ocean model, development of improved earth system models and research on the interactions and feedbacks of the biosphere with climate on varying time scales. Research initiatives include sensitivity of CO2 fertilization, impact of climate on the terrestrial carbon cycle and the effect of land use on the terrestrial carbon stores and stocks from decadal to centennial time scales. Effective communication of research via oral presentations and written manuscripts.

01/02 to 03/08

RS Information Systems, Inc./Wyle Laboratories, Software Engineer:
NOAA/Geophysical Fluid Dynamics Laboratory, Princeton, NJ.
Contracted at the National Oceanic and Atmospheric Administration's (NOAA) Geophysical Fluid Dynamics Laboratory (GFDL) as part of the Climate and Ecosystems group. Tasks include model execution and management of the earth system model components and the mixed layer ocean model, development of improved earth system models and research on the interactions and feedbacks of the biosphere with climate on varying time scales. Designed and created an automated vegetation analysis post processing suite for model and observation comparison. Investigation into the terrestrial biosphere and climate responses to increased radiative and photosynthetic carbon dioxide levels. As a member of the Modeling Services group for over four years, provided public and

internal release support for the Flexible Modeling System (FMS). Designed and created an automated database of FMS model development integrations used by the model development teams to catalogue and track the model development effort. Provided detailed source code module web-based documentation for the land model, LaD, and the nonhydrostatic atmospheric model ZETAC. Liaison to the Land Model Development Team (LMDT) and the Single Column Model (SCM), providing technical and programming support for two land models and the single column atmospheric model; performance profiling, ensuring bitwise reproducibility across restarts and processor counts, diagnostic support, code management and model development. Wrote user guides for the public and internal releases of the model infrastructure and the component models. I/O and data conversion from GRIB, binary, ASCII and HDF4 to netCDF, following the CF metadata conventions and using the netCDF decoders package. Conducted four hands-on tutorials and one refresher demonstration of PowerPoint 2000, as well as numerous other presentations and a Flexible Runtime Environment workshop.

02/05 to 08/05

Princeton University, Scientific Programming Consultant
Installed the National Aeronautics and Space Administration (NASA)/Goddard Space Flight Center (GSFC) Land Information System (LIS) on various platforms for the Department of Civil and Environmental Engineering, including Linux workstations, a Linux cluster and a Beowulf cluster at Princeton University. Used GrADS scripts for the development of a web-based diagnostic interface for testing and validation.

02/00 to 01/02

Rutgers University, Department of Environmental Science, Graduate Assistant
Studied land surface parameterizations using a regional nonhydrostatic atmospheric model, the Regional Atmospheric Modeling System (RAMS). Studied and analyzed the effects of land surface heterogeneity on precipitation rates during the Amazonian wet season. Used a one dimensional radiative convective model to study the effects of land surface on Amazonia's radiative and hydrological balances. Additional modeling research projects include the sensitivity of RAMS eddy diffusivity parameterizations, parameterizing the uptake of soil water through plant roots, the environmental cycle of polychlorinated biphenyls, and a critical review of atmospheric dispersion modeling. FORTRAN 90 programming and Perl scripting in a Unix environment.

05/96 to 09/97

National Oceanic and Atmospheric Administration (NOAA)
National Weather Forecast Office/Mount Holly, Student Career
Experience Program (SCEP) intern
Wrote and transmitted daily and extended local forecasts, nowcasts, fire weather forecasts and Transcribed Weather Enroute Broadcasts (TWEBs) aviation forecasts and Terminal Aerodrome Forecasts (TAFs). Experience in aviation routine weather reports (METAR) via the Automated Surface Observing System (ASOS). Broadcast watches, warnings and hourly observations on the National Oceanic and Atmospheric Administration (NOAA) weather radio. Experience on the radar and hydrology shifts. Conducted research into the propagation of sea breezes across New Jersey using the Next Generation Weather Radar system (NEXRAD). Created an internal web-based station duty manual using Hypertext Markup Language (HTML).

PUBLICATIONS: Dunne, John P., Jasmin John, Elena N. Shevliakova, Ronald J. Stouffer, John P. Krasting, Sergey L. Malyshev, P.C.D. Milly, Lori T. Sentman, Alistair J. Adcroft, W. F. Cooke, Krista A. Dunne, Stephen M. Griffies, Robert W. Hallberg, Matthew J. Harrison, Hiram Levy, Andrew T. Wittenberg, Peter J. Phillipps, N. Zadeh, *in press*:

GFDL's ESM2 global coupled climate-carbon Earth System Models Part II: Carbon system formulation and baseline simulation characteristics. *Journal of Climate*. DOI:10.1175/JCLI-D-12-00150.1. 10/12.

Dunne, John P., Jasmin John, Alistair Adcroft, Stephen M. Griffies, Robert W. Hallberg, Elena Shevliakova, Ronald J. Stouffer , W. F. Cooke, Krista A. Dunne, Matthew J. Harrison, John P. Krasting, Sergey Malyshev, P. C. D. Milly, Peter Phillipps, Lori T. Sentman, Bonita L. Samuels, Michael J. Spelman, Michael Winton, Andrew T. Wittenberg, and N. Zadeh, 2012: GFDL's ESM2 global coupled climate-carbon Earth System Models Part I: Physical formulation and baseline simulation characteristics. *Journal of Climate*, 25(19). DOI:10.1175/JCLI-D-11-00560.1.

Sentman, Lori T., Elena Shevliakova, Ronald J. Stouffer, Sergey Malyshev, 2011: Time Scales of Terrestrial Carbon Response Related to Land-Use Application: Implications for Initializing an Earth System Model. *Earth Interactions*, 15, 1-16. doi:10.1175/ei401.1.

Shevliakova, E., S. W. Pacala, S. Malyshev, G. C. Hurtt, P.C.D. Milly, J. P. Caspersen, L. T. Sentman, J. P. Fisk, C. Wirth, and C. Crevoisier (2009), Carbon Cycling under 300 Years of Land-use Change: the Importance of the Secondary Vegetation Sink, *Global Biogeochem. Cycles*, 23, GB2022, doi:10.1029/2007GB003176.
* Appears as a research highlight in *Nature Reports Climate Change*, 5, doi:10.1038/climate.2009.35, April 2009.

GFDL Global Atmospheric Model Development Team, 2004: The new GFDL global atmosphere and land model AM2/LM2: Evaluation with prescribed SST simulations. *J. Climate*, 17(24), 46414673.

PRESENTATIONS: "Land Ecosystems and Biogeochemical Cycling", GFDL External Review, July 2009.

"The Importance of Land Use for the Evaluation of Terrestrial Carbon: Preindustrial Equilibrium or Transient?", QUEST/GLASS land benchmarking workshop, Exeter, UK, June 2009.

"The New Mixed-Layer Model: SM2.1-LM3V", GFDL, February 2008.

AWARDS: NOAA Graduate Sciences Program, 2012-2013.
RSIS Employee of the Month, Science and Engineering Division. October 2002.
RSIS Delighting the Customer Award (FMS team). January 2002, June 2002.

PROFESSIONAL SERVICES: Expert Review of the Second Order Draft WGI contribution to the IPCC Fifth Assessment Report

COMMUNITY OUTREACH: "Weather for Kindergarteners, Part II: Thunder and Lightning", Deans Crossing School, Monmouth Junction, NJ.
  March 2012.
"Weather for Kindergarteners, Part I: Clouds", Deans Crossing School, Monmouth Junction, NJ.
  December 2011.

"The Water Cycle II", Plainsboro Library, Plainsboro, NJ.
  July 22, 2009.
 "The Water Cycle I", Plainsboro Library, Plainsboro, NJ.
  July 8, 2009.
Rapporteur, Climate Working Group (CWG) CRM Program Review.
  March 25, 2008.
"Science and Engineering Expo", Princeton University, Princeton, NJ.
  March 19, 2008.
"2008 Young Women's Conference", Plasma Physics Laboratory,
Princeton, NJ.
  March 14, 2008.
"Weather, Oceans and Climate", Plainsboro Library, Plainsboro, NJ.
  October 18, October 25, November 8, November 15, November 29
  and December 6, 2007.
Article reviews for Journal of Geophysical Research Atmospheres.
  2000-2002.

PROFESSIONAL QUALIFICATIONS:

NUMERICAL MODELS: LM2, LM3V, LM3, AM2, ESM2.1, ESM2M, ESM2G, SM2.1, SM2

OPERATING SYSTEMS: Linux, IRIX, Windows, SGI Altix Itanium 2 Intel cluster, SGI Origin cluster, Beowulf cluster, Unix, Solaris, SunOS, MSDOS, Gnome, KDE.

DATABASES: MySQL, MS Access.

PROGRAMMING LANGUAGES: FORTRAN 77/90/95, C/C++, Perl, CGI, HTML, DHTML, XML, JavaScript.

VISUALIZATION TOOLS: MatLab, FERRET, GrADS, ncview, NCAR Graphics, VIS5D.

DEBUGGING SOFTWARE: Totalview (all versions), Alinea

DATASET CONVENTIONS: netCDF, netCDF decoders, CF convention, HDF.

OTHER SOFTWARE PACKAGES: StarOffice, Microsoft office (Word, PowerPoint, Excel, Access, Project), Lotus Notes, Adobe products (Reader, Writer), XEMACS/EMACS, VI editor, NEDIT, Sendmail, Internet Explorer, Netscape, Mozilla, Konqueror, Apache web server.

PROFESSIONAL ORGANIZATIONS:

American Meteorological Society
American Geophysical Union
Earth Science Women's Network
Federal Women's Program

CONTACT INFORMATION:

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